

WHAT IS CLAIMED IS:

1. A clean assembling module device for performing an operation with respect to a work, characterized in that, the clean assembling module device
5 is provided with a clean air generating means at an upper part of the device, and is constructed so as to include from an upper part side of the device a working area, a clean air retaining and exhausting area, and a mechanism section area, an outer periphery of the working area being covered with a clean region shielding wall, a flow-resistance of the working area and the
10 clean air retaining and exhausting area being controlled by a partition wall having a plurality of small holes, the mechanism section area being provided with an exhaust fan to exhaust the air flowing through the working area and the clean air retaining and exhausting area to an outside of the device, the working area being controlled at a positive pressure by the clean air
15 generating means, the mechanism section area being depressurized with respect to the working area, and a pressure of the clean air retaining and exhausting area being adjusted by means of the small holes of the partition wall and a rotational speed of the exhaust fan so as to be a middle pressure between a pressure in the working area and a pressure in the mechanism
20 section area.
2. The clean assembling module device according to claim 1, wherein a working mechanism for performing an operation such as assembling, working, carrying or the like of the work is installed in the working area.
3. The clean assembling module device according to claim 2, wherein the
25 working mechanism is a mechanism in which one part of the mechanism penetrates through the clean air retaining and exhausting area and enters into the mechanism section area.
4. The clean assembling module device according to claim 1, further comprising a carrier means for carrying in and carrying out the work which

penetrates through the clean region shielding wall, wherein the working area is provided with a penetration part through which the carrier means penetrates for allowing connection with the outside.

5 5. The clean assembling module device according to claim 4, wherein the penetration parts are disposed at two or more positions, two of the penetration parts are installed such that the work is carried within the clean assembling module device in a linear manner.

6. The clean assembling module device according to claim 1, wherein the working area includes a door for maintenance and the door is constructed
10 such that a plurality of aperture areas can be selected corresponding to contents of maintenance.

7. A production system comprises a plurality of clean assembling module devices according to claim 4, wherein the clean assembling module device is connected to another clean assembling module device by connecting the
15 penetration parts such that a work can be carried in or carried out by a carrier means, and the connection is performed by means of that a U-shaped seal member is fitted to the flange parts of the penetration parts to seal between the penetration parts.

8. The production system according to claim 7, wherein a gel-like sealing
20 material is coated between the U-shaped seal member and the flange part of the penetration part.

9. The production system according to claim 7, wherein fitting condition of the U-shaped seal member is such that an open part of a U-shape faces in a downward direction.

25 10. A production system comprises a plurality of clean assembling module devices according to claim 4, wherein the clean assembling module device is connected to another clean assembling module device by connecting the penetration parts and a tunnel accommodating the carrier means such that a work can be carried in or carried out by a carrier means, and the connection

is performed by means of that a U-shaped seal member is fitted to the flange parts of the penetration parts and the tunnel to seal between the penetration parts and the tunnel.

11. The production system according to claim 10, wherein a gel-like sealing material is coated between the U-shaped seal member and the flange part of the penetration part and the tunnel.

12. The production system according to claim 10, wherein fitting condition of the U-shaped seal member is such that an open part of a U-shape faces in a downward direction.

13. An industrial robot having a horizontal sliding mechanism, an upper and lower lifting mechanism and an arm turning mechanism for performing assembling, working or the like on a work, characterized in that, the upper and lower lifting mechanism includes a shaft, a shaft guide part supporting the shaft, and an upper and lower lifting drive device which makes the shaft go up and down, the arm turning mechanism including a turning arm and a turning drive device for turning the turning arm, the turning arm being disposed on an upper side of the shaft guide part, and the horizontal sliding mechanism and the upper and lower lifting drive device being disposed on a lower side of the shaft guide part to keep the weight balance to the shaft guide part.

14. The industrial robot according to claim 13, further comprising a partition wall, which is provided at an upper position of the turning drive device and the shaft guide part and at a lower position of the turning arm, for maintaining a work environment for assembling, working or the like on the work.

15. The industrial robot according to claim 14, wherein the partition wall includes a first partition wall having a slit hole allowing the industrial robot to slide in a horizontal direction and a second partition wall having a through-hole for the shaft.

16. The industrial robot according to claim 13, further comprising a rotation shaft provided at an arm end of the turning arm for rotating the work or performing a rotational operation for the work.

17. The industrial robot according to claim 13, wherein the turning arm
5 comprises a plurality of arms.

18. The industrial robot according to claim 13, wherein a mounting face for mounting the industrial robot is provided in a parallel direction to an axial direction of the shaft.

19. A contamination propagation preventing system in a production
10 system in which a plurality of clean assembling module devices for performing prescribed manufacturing processes such as assembling, working and the like on a work are connected with a tubular connection passage to form a clean region and realize a series of clean manufacturing processes, characterized in that,

15 at least either one of a contamination occurrence detecting means for detecting contamination occurred in the clean region of an inside of the system and a contamination occurrence prediction means for predicting the occurrence of contamination, and a contamination propagation prediction means for predicting the propagation of the contamination having occurred
20 to another clean assembling module device, and a contamination propagation preventing means for preventing the propagation of the contamination having occurred to another clean assembling module device are provided in the clean assembling module device or the connection passage.

25 20. The contamination propagation preventing system according to claim 19, wherein the contamination occurrence prediction means is a means for predicting an occurrence of contamination based on information of a flow rate and a flow direction of air within the connection passage.

21. The contamination propagation preventing system according to claim 19,

wherein the contamination propagation prediction means is a means for predicting a propagation of contamination based on information of a flow rate and a flow direction of air within the connection passage.

22. The contamination propagation preventing system according to claim 19,
5 wherein the contamination propagation preventing means is a means for controlling a clean air generating means, which is installed in the clean assembling module device connected to the connection passage, based on information of a flow rate and a flow direction of air within the clean assembling module device where contamination is detected or predicted and
10 the connection passage connected to the clean assembling module device.

23. The contamination propagation preventing system according to claim 19, wherein defective works which are present within the clean assembling module device where contamination is detected or predicted and within a predetermined number of clean assembling module devices and connection
15 passages which are successively connected to the clean assembling module device on an upstream side or a downstream side are discharged or re-cleaned.

24. The contamination propagation preventing system according to claim 19, wherein production of works, which are present in processes further
20 downstream side from a predetermined number of clean assembling module devices successively connected on a downstream side of the clean assembling module device where contamination is detected or predicted, is continued and production of works, which are present within the clean assembling module device where the contamination is detected or predicted and prescribed clean
25 assembling module devices successively connected on an upstream side of the concerned clean assembling module device, is discontinued .

25. The contamination propagation preventing system according to claim 19, further comprising a cleanliness recovery means for recovering a cleanliness in the clean assembling module device where contamination is detected or

predicted or in the connection passage.

26. The contamination propagation preventing system according to claim 25, wherein the cleanliness recovery means includes a clean air generating means and an exhaust means for exhausting from the clean assembling module device, prevention of contamination propagation being performed by reducing a flow quantity of clean air from the clean air generating means, which is installed in the clean assembling module device connected to the connection passage, based on information of a flow rate and a flow direction of air in the clean assembling module device where contamination is detected or predicted and the connection passage connected to the concerned clean assembling module device, and recovery of cleanliness is performed by gradually increasing a flow quantity of reduced clean air from the clean air generating means to a flow quantity which is required to ensure the cleanliness of the clean region.